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United States Patent [19]

Goto et al.

[11] Patent Number: **5,212,375**[45] Date of Patent: **May 18, 1993**[54] **CAMERA FOCUS DETECTION SYSTEM
USING HOLOGRAPHIC BEAM SPLITTER**

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[52] U.S. Cl. **250/201.7; 359/15; 354/407**

[58] Field of Search **250/201.7, 201.8, 216, 250/204; 359/15, 13; 354/406, 407, 466**

[56]

References Cited**U.S. PATENT DOCUMENTS**

4,255,032 3/1981 Matsumoto et al. 359/13
4,294,529 10/1981 Sato et al. 354/466
4,945,529 7/1990 Ono et al. 359/15
4,950,879 8/1990 Ishid et al. 250/201.8
5,016,954 5/1991 Onayama et al. 250/201.1

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[57]

ABSTRACT

An imaging system having a focus detecting device performs focus detection by detecting an output signal indicative of intensity distribution of light derived from a light-receiving element, in which at least one holographic optical element is arranged on the object side of a primary imaging plane to form an image on the light-receiving element. Thus, the imaging system has significant advantages in practical use that the arrangement is simple and the camera body is made compact.

4 Claims, 7 Drawing Sheets

